

FINAL REPORT

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“Conservation and Documentation of the Wall Paintings at the Red Monastery, Sohag”

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INTRODUCTION

This report covers work performed under the sub-grant, "Conservation and Documentation at the Red Monastery, Sohag", an activity of the Egyptian Antiquities Conservation Project (EAC) funded by the United States Agency for International Development (USAID). The American Research Center in Egypt (ARCE) was awarded the EAC project agreement in July 2004. The following report describes work performed from March 8th to April 20th 2008.

The conservation campaign conducted in the Monastery of St Bishoi (Red Monastery) at Sohag during the spring of 2008 involved various parts of the building: the façade; the left-hand section; the second, third and fourth tiers; the *protesis*; the adjacent north corridor and the left-hand monumental column [*of the archway*] giving access to the triconch. A small test cleaning was then carried out on the vault of the *diaconicon* to ascertain whether the original decoration was present beneath the wash.

The mission also afforded us an opportunity to check systematically the condition and effectiveness of the restoration work on the plaster and stone surfaces. Restoration work was also carried out on the columns of the first tier in the south and north lobes and the first column on the right in the east lobe, particularly with regard to the inscription on the column shaft.

In the facade, work was begun on all the surfaces including the late antique plaster, the medieval plaster, the conches, the stone moldings and more recent architectural and restoration work undertaken since the time of the restoration campaign conducted by the Comité.

As a result of the work, a substantial percentage of the painted surface has been restored and the entire area has been given a sense of aesthetic unity. The opportunity to work above the arch giving access to the north corridor has enabled us to understand the peculiarities of the masonry structure, clarify the various levels of the complex palimpsest and put forward an overall reading for the plaster and painting. The vast areas plastered following ancient structural upheavals have been recovered, the plaster and repairs restored and the limestone blocks replaced.

We were able to explore in greater detail the technical characteristics, state of preservation and earlier restoration work in an area in which we had done little work by adapting the working criteria, guidelines and methods already applied in the triconch.

Work on the uppermost window, started in 2007, was completed together with the left-hand monumental column of the arch giving access to the triconch (Fig. 2). Work on the capital was completed and restoration work on the granite shaft extended to approximately one third of the length of the column.

In the *protesis* the west and south walls and interior of the north arch were completed. In the adjacent corridor, the area of restoration on the south wall was enlarged to include the decoration on the arch leading to the *protesis*. A small stratigraphic test cleaning (15 x 7 cm) was carried out in the vault of the *diaconicon*. This revealed the presence of late antique plaster¹ concealed beneath the layer of modern plaster. However, at present we can only speculate about the extent and state of preservation of the underlying decoration.

¹ This decoration is likely to be contemporary with that in the *protesis*.

In the east lobe of the Triconch an extensive test cleaning was carried out on the shaft of the first column on the right, which, like its counterpart on the left, is made of white marble, probably Greek in origin.

On the granite columns in the first tier of the north and south lobes, where restoration work was carried out during earlier missions, we began carefully repairing holes in the white wash in order to reintegrate them into the whole and give this surface a sense of unity².

All areas of intervention were comprehensively photographed before, during and after restoration.

WORKING METHODS

Architecture

The facade is built of blocks of local limestone, bedded in a fine-grained mortar. The joints are very precise and thin (1-1.5 mm). Unlike the masonry of the triconch where the limestone blocks are supplemented by brick infilling and mortar, the interior of the niches, the sculptural decorations and the moldings of the façade are entirely made of limestone.

In order to understand the techniques used to build the facade, it would be useful at this point to describe the arrangement of the blocks in the two niches in the second and fourth tiers (see Figs. 14 and 22). Both are made up of a total of five stone elements, namely the tympanum, forming the upper part, the shell, comprising the cornice and back, the lintel and the two capitals. On the surface of the limestone blocks, where the plaster is patchy, the preparatory layers can be recognized by the distinctive signs of the toothed tool used to work the stone.

During this campaign we have been able to explore in greater depth those observations regarding the analysis of the masonry of the façade, the north corridor and the *prothesis* that were made after the restoration campaign of April 2007. The upper part of the facade, the north wall of the corridor and the wall with the painting of the Saint on Horseback, were extensively rebuilt during the Middle Ages and major rebuilding work was carried out on the perimeter wall of the monastery³. We can speculate that, between the eleventh and thirteenth centuries, presumably as a result of structural problems in the building⁴, the external wall was entirely rebuilt whilst the central body of the triconch remained substantially unaltered.

² In the context of giving a certain uniformity to the conserved and painted surfaces in the church, the extensive fragments of wash on the columns have led us to consider the possibility of repairing the medieval wash in order to obtain an aesthetic equilibrium in the first tier. The project directors will weigh up this consideration within the context of the restoration project.

³ We wish to extend thanks to Dr. N. Warner for the insight relating to the origins of the structure of the external wall of the monastery. Dr. Warner was the first to observe that the big external wall was rebuilt subsequent to the original construction of the triconch.

⁴ It is interesting to observe that, on the triumphal arch, minute cracks along the lines of the mortar that the Comité used to bed the stone blocks bear testimony to the delicate static equilibrium of the facade. Since the Spring 2007 mission, these cracks have been monitored using a crack monitor.

Ever since an in-depth visual analysis of the masonry in the courtyard was conducted during the campaign of Spring 2007, we have been aware of the presence of a single coat of plaster that differs profoundly from the palimpsest encountered in the triconch. This single layer of plaster is also present inside the church, on the external walls of the two corridors, in the *diaconicon* and the *prothesis* and on the left-hand wall of the façade.

The bricks of the external wall are bedded approximately 1-1.5 cm apart in a gray mortar containing carbon, brick dust and irregularly sized inclusions. A visual analysis of the mortar revealed it to be similar in all respects to the bedding mortar of the late antique architectural nucleus.

The *prothesis* is built of bricks bedded in lime mortar⁵. The mortar is gray in color with irregularly sized inclusions, similar to that described above⁶. The bricks used in the walls are larger than those in the vault that is set on four walls culminating in a semi-circular arch and slightly flattened.

The keystone of the vault is a sculptured and molded stone disc. In this area the bricks are set horizontally; they meet along the junction of the pendentives and are bedded in a clay- and straw-based mortar⁷.

There is a piece missing from the abacus of the southernmost marble column in the east lobe. For this reason, the limestone capital placed over the base line was cut diagonally to adapt itself to the fracture⁸.

Plaster

Façade

The façade has mostly the third-phase plaster associated with the period of encaustic decoration. This plaster is approximately 1.5 cm thick but thins out over the moldings and capitals to become a thin wash.

The area of the arch above the access door to the north corridor has another layer of plaster in addition to those observed in the triconch.

Starting with the earliest phase, the surface of the stone blocks is primed with a very thin coat of white wash (1-2 mm thick) similar to that used on the stone arches of the north and south lobes. This layer is very well preserved, to the extent that it is still possible to read and

⁵ Fired bricks measuring approximately 25 x 7 x 10cm.

⁶ Comprising a lime-based mortar rich in straw, applied in two coats. During this most recent campaign, the constituents of the plaster types and bedding mortars were studied in greater depth. They will be dealt with in Dott. D. Poggi's technical report.

⁷ On the basis of a visual analysis of the bedding mortar, it appears to be composed of mud and straw.

⁸ The stonecutters responsible for the limestone architectural elements and capitals adapted their work to accommodate the two marble columns in the east lobe that are probably spoils from an earlier building. The granite columns in the first tier of the triconch were presumably taken from older buildings as well.

distinguish clearly the techniques used to transfer the design (Fig.3, see Fig. 10) and the decorative motifs.

The white wash associated with the fourth phase (*Virgo Lactans*) can hardly be made out on the facade, probably as a result of earlier conservation work of dubious efficacy. A few significant traces are however visible in the niche with the *velarium* in the fourth tier (Fig. 4) and on the moldings of the window surmounting the triumphal arch. The largest fragment of white wash from this phase (Fig. 5) can be seen below the arch giving access to the corridor, on the panel to the right of the niche, probably because the molding of the niche protected it.

The painter of the *Virgo Lactans* decided to cover the pre-existing decoration on the capitals and semi capitals of the facade with a very thin layer of white. This decision is quite in keeping with the aims of the painter of the fourth phase who had already partially covered the polychrome decoration in other parts of the church with white wash whilst retaining some of the third-phase decoration because it was well-preserved and in keeping with his own new program.

As already mentioned, the façade area has a further phase of application of decorated plaster not encountered to date in the triconch. At the time of the major reconstruction of the external perimeter wall during the medieval period, the points of connection between the new wall and the old one and the gaps in the plaster were repaired with a lime- and straw-based mortar. The plaster was then treated with a wash to make the surface uniform⁹. In the second tier, we worked on two small extant areas of medieval plaster, applied directly over the third-phase plaster (Fig 6, see Fig. 35). This plaster is 8-10 mm thick and comprises a white lime-based mortar with a minimal percentage¹⁰ of sand and a considerable amount of straw in the mix. It is likely that these two fragments were part of a larger area where the space between the two pilasters was filled in order to create a uniform surface for a single composition¹¹.

Protesis and north corridor

The plaster in the *protesis* is approximately 1 cm thick and shares some similarities of composition with the third-phase plaster, such as the presence of sand and a high percentage of lime. It now appears likely that the plaster in the *protesis*, the two west and south lunettes restored to date and the painted plaster in the corridor represent the first original application of plaster in the church.

The painter of the *Virgo Lactans* applied his coat of white wash over this plaster (Fig. 7). As we have observed on several previous occasions, the painter did not consider the application

⁹ The whole of the left-hand part of the facade, including the north arch, has been rendered uniform in this way.

¹⁰ The amount of sand is so negligible as to suggest that its presence is accidental, resulting from the conditions under which the mortar was mixed.

¹¹ The medieval fragments and residual traces of plaster in the lower left-hand part of the facade suggest that this phase extended over the whole of the first tier. The plaster can be linked with that on the adjacent north wall where the Saint on Horseback (*Aganistos*) appears. The plaster types covering the walls of the courtyard are also of similar composition.

of a new coat of plaster necessary, but relied on the properties of the white wash and used it as a covering preparation directly over the preexisting paint layer. This layer was applied to the entire surface and varies between 0.5 and 1.5 mm in thickness.

In the north corridor the plaster types analyzed during our restoration work were found to contain materials typical of the locality (lime and local sand) and were distinguished by a white color and a very smooth surface finish that suggests a percentage of powdered limestone was used in the mix. Close visual analysis of this plaster¹² (Fig. 8) shows close similarities with that in the *protesis*. These similarities place the first painting of the vault and lunettes (*protesis*) in close chronological relation to the decoration of the corridor. Furthermore, as a result of the work and observations of project chemist Dott. Domenico Poggi, we now understand more clearly that the plaster of the third phase can be distinguished from the first phase by the smaller quantity of binder used and the presence of larger, rounder inclusions of quartz sand (Fig.9).

Paint layer

In the facade the stratigraphy of the palimpsest varies according to the state of preservation of different areas and the requirements of the painters who worked on specific areas at different times, modifying or minimally touching up the older decorations. For this reason, we decided to follow a descriptive order in this area that respects the chronology of the palimpsest, starting with the oldest phase and concluding with the most recent.

[Captions to photographs:

Fig. 8 (plaster, section – *protesis*)

Fig. 9 (plaster, section – façade)]

First phase

The first phase of painting is clearly visible in the area around the arch, above the room providing access to the north corridor.

The state of preservation and the work on various surfaces has enabled us to understand some of the working methods. For example, we have observed how the builder's line technique (Fig. 10) was used to set out the design.

Here the decoration consists of a geometric chessboard design inscribed with roundels and floral elements¹³. The niche is decorated with a *velarium* or curtain (Fig. 11). The upper edge of the suspended curtain is rendered by a broad, heavy brown line. A geometric pattern made up of a double black zigzag line approximately 1.5 cm wide runs horizontally across the center. The curtain is decorated with typical circular plant patterns painted in red. This leads us to observe that the theme of the *velarium* is rooted in the Coptic tradition and that

¹² Possibly owing to close observation in patchy areas where the plaster could be analyzed and photographed in section.

¹³ It is interesting to observe that the design in question was subsequently taken up by the painter of the third phase and used in the area of the triconch.

the paintings of the first phase have links with all the phases of decoration that follow, particularly the third phase.

The ornate external molding of the arch above with its curvilinear motif composed of red lines and yellow roundels can also be ascribed to this phase of decoration. It is interesting to compare this motif with that running along the base of the barrel vault in the north corridor.

Our work has enabled us to recover architectural features and painted decorations belonging to the window surmounting the facade, the reading of which was extremely difficult (Fig. 12). The limestone has a smooth finish and is decorated mainly in red on a white background. The technical characteristics of the preparation of this area can be ascribed to the first phase. However, the decorative elements may have been tampered with during the various instances of misguided restoration work on the building.

It is significant that there should be an inscription under the tympanum and the shell (Fig. 13) in an area so difficult to reach and too high up to be read from below.

The decoration, that it may be possible to ascribe to the first decorative phase of the church, highlights the sculptural aspects. The deep areas of relief are painted black, thereby increasing the contrast with the projecting parts that are left white.

Third phase

The decorations on the facade belonging to the encaustic or wax technique phase already described in 2007 share similar characteristics with the decorations in the triconch¹⁴.

A comparison of the decoration of the niche in the second tier with the others in the triconch reveals that the decoration of the latter is somewhat simplified (Figs. 14 and 15). The design of the shell is highlighted with green lines, the background is white and the preparatory work can be seen. Given the dimensions of the niche, even the *velarium* is painted with a limited palette in a less elaborate and detailed manner¹⁵. Also during the third phase, the front of the arch giving access to the north corridor was decorated with a zigzag band¹⁶ containing alternating heart shapes within triangles (Figs. 16 and 17). Once again, we can ascribe the decoration of the external molding with its curvilinear motif of red lines, probably intended to imitate the hem of a curtain, to this phase of decoration. Two crosses, each inscribed within a circle, are painted at the base of the arch. The right-hand cross is clearly visible (Fig. 18) whilst the left-hand one is obscured by the medieval wash.

In the second tier, a half-length image of the Madonna inscribed within a clipeus is painted between the two pilasters above the access door to the north lobe. Many parts of this painting are now missing owing to extensive falls of plaster (Fig. 19). This decoration, in ochre and red, is painted on third-phase plaster and surrounded by a band of pink encaustic

¹⁴ There are a few surviving pieces of painted plaster in the area of the triumphal arch that enable us to understand how this area was plastered and decorated.

¹⁵ It should be pointed out that as a result of earlier attempts at conservation, the wax in the encaustic painting has been almost completely lost. This area therefore appears far less colorful than it would have done originally.

¹⁶ The band is painted in an encaustic pink pigment, marked off by two black lines.

pigment. This typical iconography was taken up by the painter of the fourth phase in the west lunette in the *protesis* (Fig. 20).

In the third tier there is a disc containing concentric geometric motifs painted in a wide range of colors (Fig. 21). Up in the fourth tier, there is a small niche also decorated with a *velarium* (Figs. 22 and 23).

Fourth phase

Remnants of this phase in the façade are few in number and extremely patchy¹⁷.

At the sides of the niche in the area above the archway to the north corridor, the painter of the *Virgo Lactans* painted the opposing figures of two angels, turning towards the *velaria*, their arms extended in offering. At this juncture it is worth pointing out the similarity between these angels and the archangels flanking the benedictory Christ in the *protesis* (Figs. 24 and 25).

Some of the concentric polygons making up the geometric design of the disc in the third tier have been repainted (Fig. 26).

The decoration of the niche in the fourth tier has been completely reworked with geometric designs and circular and lanceolate elements (see Figs. 22 and 23). The lunette is decorated with a painted shell in purple, thrown into relief by a black background and white highlights (Fig. 27). The similarity between this combination of colors and the backgrounds of the niches in the north apse depicting prophets flanking the enthroned Madonna is particularly striking.

Medieval phase

The medieval phase (11th-13th centuries) overlies the two layers of late antique painting. It is present on the northern arch above the doorway to the corridor (Fig. 28), the extensive area above this and the two fragments on the pilasters in the first tier. To date we think that this phase can be divided chronologically into a first period of work during which the crosses and geometric decorations on the northern arch, closely related to those in the nave, were executed and a subsequent period during which the two surviving fragments on the pilasters in the first tier were executed (See Figs. 35 and 36). These latter can be linked with the phase of the Saint on Horseback painted on the north wall.

The phase of the crosses is distinguished by a highly stylized form of execution using a limited palette in which earth pigments and ochre are principally used to lay out the design. On the front of the north arch the decoration comprises a zigzag geometric design of

¹⁷ The fourth phase has been encountered in the uppermost window, in the niche with the *velarium* in the fourth tier, in the polychrome disc in the third tier and in the limited repainting and modification of the architectural elements including the semi capitals and the capital of the monumental column.

rectilinear lines with a blue band running through the center¹⁸. The upper molding is decorated with a 'fishbone' motif comprising geometric shapes that are filled in at intervals. At the base of the arch the motif terminates in a circle inscribed within a circular frame and containing other circles. These overlap to form a stylized floral pattern in the center (Fig. 29). In a raking light it is possible to see that a compass was used to draw this design.

Nine designs with alternate geometric, floral and animal motifs inscribed within intertwining curvilinear and rectilinear bands are painted on the underside of the arch (Fig. 30).

The flat panels outside the niches are decorated from the bottom up with two crosses. Above these, two more crosses are inscribed within a circular frame¹⁹ (see Fig. 24). In the space above that are two peacocks, positioned to fit the architectural space (Figs. 31 and 32).

Inside the niche all that remains of the medieval phase is the decoration of the lunette with its stylized shell motif (Fig. 33).

In the tier above this area is painted a large cross within a red disc. A veil, the symbol of the passion, is draped around the arms of the cross. The inside of the cross is decorated with an intertwining design that includes geometric and plant shapes (Fig. 34).

The design was set out using a brush, in yellow ochre, whilst the external band was painted in red ochre. Small fragments of encaustic green pigment emerged during the cleaning process, showing that encaustic pigments were still being used during the medieval phase, although they are no longer visible in the paintings in the nave. The pattern [inside the cross] comprises entwining green bands on a light yellow background.

The background of the cross is the white of the unpainted plaster, decorated with small red circles similar to those adorning the background of the peacocks described above.

The two fragments to the right and left of the Madonna in the clipeus in the first tier differ from the rest of the medieval phase for technical as well as stylistic reasons. The larger fragment on the left pilaster depicts a small column painted to resemble marble in green and yellow (Fig. 35). Next to it is a painted niche that probably contained a depiction of a Coptic saint, although only part of his halo now remains. In the other fragment on the right hand pilaster, part of the head of a holy monk in the Coptic tradition can be made out (Fig. 36). Although they are badly damaged, these two painted fragments allow us to draw a close analogy with the executive technique of the Saint on Horseback on the north wall (*Aganistos*) and to identify a technique coherent with the Coptic tradition of painting during the 11th and 13th centuries.

¹⁸ At the moment we are speculating that this blue may be comparable to the fragments of blue present in the crosses on the north wall of the nave and that the material in question may be lapis lazuli. Towards the 8th and 9th centuries AD the use of *fritta egizia* blue was abandoned and painters began using natural ultramarine blue again.

¹⁹ On the outermost disc of the left-hand cross, careful cleaning has revealed a tiny design that is certainly much later than the painting. It appears to represent a camel and its young and is accompanied by a patchy Coptic inscription. At the present time it is difficult to hazard an interpretation.

As far as the working methods and phases of painting of the palimpsest in the *prothesis* are concerned, we can confirm what appeared in the Autumn 2007 report²⁰.

Work has been completed on the south (Fig. 38) and west (Fig. 39) lunettes, the front of the arch giving access to the north corridor and the treatment of the plaster on the east wall, including the niche.

The work has enabled us to confirm the presence of two phases of decoration of the palimpsest: the older one, presumably linked to the first phase of painting in the monument, and a more recent one, contemporary with the fourth phase (*Virgo Lactans*).

Only a few compositional elements of the first layer can be made out in the south lunette. However, we can state speculatively that the iconography of the earlier painting was similar to that visible today. In the lower part of the composition, the patchy and abraded surface of the fourth phase reveals a braid²¹ framed in red that demarcates the lower part of the painting. At the far right the marks of the builder's line used to set out the design are clearly visible.

Below the lunette the space is divided into four panels by three vertical red lines (Fig. 39). The two central panels are decorated with small quatrefoil shapes while the third and fourth are painted with two oblique lines, only the imprints of which are visible today. The panels bear inscriptions and designs in red ochre. On the second from the left there is a cross within a jagged line whose edge overlaps the upper horizontal line. The third and fourth bear two inscriptions, the right-hand one of which is enclosed within a rough oval. The head of a young man appears on the far right panel, above the fragments of an inscription possibly referring to him.

Moving on to the west lunette, the iconography of the first phase painting described in the previous report²² can be confirmed. The work carried out has rendered the left arm of the cross more visible together with a number of decorative shapes, possibly vegetal in nature. The phase of the *Virgo Lactans* is clearly legible in iconographical and pictorial terms owing to its state of preservation. The decoration of the two lunettes is inscribed within two semicircular frames that are black with white ovals.

The benedictory Christ is depicted in the south lunette, between the archangels Michael and Gabriel²³ (Fig. 37). The standing figure of Jesus has a moustache but no beard and holds the book in his left hand. The two monograms IC and XC are visible to his right and left. The preparatory design is particularly evident around the face and the hands of the two

²⁰ L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the Wall Paintings 26 October–21 December 2007.

²¹ Certainly painted during the same phase as the braid that runs horizontally along the north corridor.

²² L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the Wall Paintings, 26 October–21 December 2007.

²³ Traces of an inscription between the wings enable us to identify the left-hand archangel as Michael and the right-hand figure as Gabriel.

archangels owing to the transparency of the whitewash²⁴. The rapid strokes used to sketch in the figures and details within the composition are visible. As he worked, the artist used the preparatory design as a rough indication of where the figures should be and did not bother to follow the lines slavishly with the result that in the final version the subject has moved several centimeters (see Fig. 7). We have been able to recover the albeit patchy figure of the archangel Gabriel in his entirety, with his feet overlapping the frame of the composition.

The decoration of the west lunette is divided into two parts. On the right-hand side, there is a full-length figure of a saint at prayer and on the left a clipeus with a frontal depiction of the Virgin. This image is painted over the door giving access to the triconch that reduces the area of the lunette.

A comparison of the two paintings shows that the artist applied a thin wash of ochre directly to the white areas not coated with white wash in order to paint the flesh tones. The hands of the Madonna were painted in the same way. The fingers of the hand of the Christ Pantocrator holding the book were however painted over the red of the draperies in white pigment similar to that used for the pearls on the robes.

In the north corridor the large test cleaning was extended to include the right-hand section of the arch giving access to the *prothesis*. The paintings are hidden beneath an undecorated coat of wash²⁵ applied during the medieval period. There is one exception: a Coptic inscription at the bottom, executed in red, using a brush²⁶ (Fig.40).

The particularly patchy state of preservation of the wash inclined us to recover the paintings underlying it. This painting, already described in the Autumn 2007 report²⁷, follows a precise design that uses a compass to trace a horizontal motif of concentric circles (approximately 70 cm in diameter) that intersect and intertwine (Fig. 42). The design is framed by two horizontal red bands. Above this motif, the decorative band ends in a braid that runs horizontally along the whole corridor. The decoration discovered to the right of the arch during this mission mirrors that on the left side: a peacock resting its feet (now lost owing to the fall of a portion of plaster) on the edge of the arch, a smaller bird to the right and plant designs (Fig. 41).

A small stratigraphic test cleaning (measuring approximately 15 x 7 cm) was undertaken in the vault of the *diaconicon*. The removal of the modern plaster revealed the presence of traces of original color from the late antique phase. It is currently hard to predict the extent and state of preservation of the surviving decoration. One of the aims of the Spring 2009 mission will be to undertake more detailed investigation of this area and plan the type of restoration work required.

²⁴ This transparency is the result of the abraded condition of the surface and the natural polymerization of the organic elements in the whitewash.

²⁵ We now think that this can be connected with the period when the external perimeter walls of the church were built and is medieval in date.

²⁶ The characters and stylistic features of this inscription have links with the two inscriptions on the whitewashed granite columns in the north and south lobes (first tier).

²⁷ L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the Wall Paintings, 26 October – 21 December 2007.

A test cleaning in the east lobe has enabled us to recover the surface and substance of the Greek marble of which the far right-hand column is made as well as a Coptic inscription on it, possibly medieval in date. The monograms of Christ (IC XC) can be made out on the upper part. Owing to its state of preservation, the end of the text is not completely legible (Fig. 45).

STATE OF PRESERVATION AND PREVIOUS RESTORATION WORK

Masonry

The geological features of the site, ancient earthquakes and the transformation of the monument over the centuries have all contributed to the structural instability of the facade. A simple comparison of the current state of affairs and old photographs and drawings of the facade, including those from the early 20th century (Figs. 46, 47, 48 and 49 taken from C. Meurice, *Redécouvertes et premiers travaux sur les monastères de Sohag*, 2004), namely before the radical intervention of the Comité, show the scope of the work carried out on the façade and the nature of the structural problems. The photos (Figs. 44 and 47) show the top part of the façade without a roof and, backing onto the building at the height of the triumphal arch, a number of brick-built vaulted constructions. These were built during the medieval period to close off the area of the triconch and support the highly unstable façade²⁸.

The Comité removed the structures buttressing the facade and created a stabilizing system for the area using metal chains. The monumental columns still standing and those re-erected during the restoration work were supported by this system (Fig. 46).

Various projects were carried out during the 20th century, some by the Egyptian Antiquities Organization. Today the area of the facade is closed off by a wall with two access doors erected perpendicular to the north and south walls of the nave. This area has a terrace roof with a raised central part, supported by cedar beams.

The Comité attempted to stabilize the facade by rebuilding the damaged and patchy areas with stone blocks and bricks. The area of the triumphal arch, repaired with bricks during the medieval period, was rebuilt using blocks of limestone. The brick and stone masonry above the arch²⁹ was not replaced, but repaired where necessary. This allowed the preservation of the three windows at the top, some of the original blocks around the triumphal arch and fragments of plaster surviving on the inside of the arch.

The space around the left niche in the fourth tier must have been extensively rebuilt. The photos show that the brick wall had collapsed almost entirely and the stone blocks at the

²⁸ As already described in 2007, the facade had been destabilized and tipped outwards (in a westerly direction) by the earthquake.

²⁹ Several cracks have been observed along the line connecting the blocks of the arch. During this campaign, two crack monitors were positioned on the external face of the arch to monitor any worsening structural instability.

base of the window and on the left side were particularly unstable. The whole upper part of the facade was rebuilt in fired brick by the Comité and replastered using a mortar of lime and sand.

With regard to work in the north corridor and *protesis*, see the 2007 report³⁰ for a description of the architectural modifications carried out during the medieval period.

Plaster

Failure to adhere, detachment and cracks and falls of plaster can be ascribed to natural and human causes. Many of the cracks are connected with earthquake shocks, the subsidence of part of the foundations and structural instability. However, the loss of portions of plaster caused by human intervention is related to changes to the building, work on the architectural structure whilst dismantling, repositioning and repairing stonework (Fig. 48) and the replacement of parts of the woodwork.

On the upper part of the facade a large part of the surface that had no plaster left as a result of long exposure to atmospheric agents was replastered under the Comité's radical restoration plan. Only scattered small fragments remain around the triumphal arch.

Above the access door to the north corridor in the third tier, the medieval plaster is fractured by a deep crack that runs from the base of the third tier down to the stone arch. This has caused a vast fall of plaster around the central part of the cross (Fig. 49) and is visible exactly at the junction between the late antique masonry and the medieval rebuild.

This plaster was applied to cover the horizontal wooden element above the north arch and now has a long horizontal gap in it that cuts off the lower arm of the cross (Fig. 50). The Comité replaced this and all the other woodwork in the facade.

The plaster lower down is better conserved since it has been less exposed to atmospheric agents and solar radiation and was more mildly affected by the earthquake. However, it is important to note how the damage caused when the Comité dismantled and repositioned many of the blocks, sometimes incorrectly, has impacted negatively on the plaster (Fig. 48).

Around the arch above the access door to the north corridor the different layers of plaster and wash are particularly patchy. Every level has extensive gaps that are not always common to all the layers and this makes it particularly difficult clearly to understand and read the palimpsest.

In the west lunette over the door in the *protesis*, the stone architrave was replaced by the Comité. This drastic and clumsily performed undertaking resulted in the loss of a sizeable portion of painted plaster, particularly below the clipeus with the Madonna. The south lunette was also marginally affected by the work in the south west corner and now has an enormous amount of plaster missing. The same lunette is missing another circular area of plaster at the feet of the benedictory Christ figure.

See the 2007 report (see note 27) for the state of preservation of the plaster in the north corridor.

³⁰ L. De Cesaris, A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the Wall Paintings, 26 October – 21 December 2007.

Paint layer

The state of preservation of the paint layer varies widely as a result of a number of factors, summarized below:

- The technical and compositional features of the materials used and the stratification of the palimpsest that uses pigment and plaster types that are sometimes incompatible.
- Water entering through cracks, windows and holes in the roof. This has caused saline efflorescence and blackening on the painted surface.
- Atmospheric agents, the deposition of unconsolidated particulate matter, the scouring effect of wind-borne sand and solar radiation.
- Bird droppings and the establishment of colonies of insects on the painted surface, in cavities in the masonry and sockets for woodwork.
- Human intervention: the use of candles and oil lamps that leave sooty residues; attempts to clean the surface in order to read the inscriptions inside the niches; the removal of more recent paint layers in search of older ones; frequent maintenance work such as polishing and dusting in the first tier. Lastly, the placing of oil lamps and candles on the floors of the niches, thereby exposing the surfaces to the deposition of organic and waxy substances.

In the facade there are copious deposits of unconsolidated dust that interact with the solar radiation of the surface and atmospheric agents (temperature changes and the scouring effect of wind-borne sand) to create consolidated deposits and particulate matter, in some cases several millimeters thick. In the delicate context of conservation, human intervention (repairs and maintenance) has often impacted negatively on the state of preservation of the paint layer.

By comparison with the triconch, the surface of the third phase is now badly damaged and some parts of it, such as the encaustic decoration, have almost entirely disappeared. In this regard it would be useful to compare and observe the state of preservation of the decoration in a niche in the triconch with one in the facade (See Figs. 14 and 15). The latter niche appears to have lost much of its color owing to the almost total absence of the wax finish. However, small fragments and areas of the pink and green encaustic decoration have been preserved in the panels at the bottom of the second tier. The difference between the facade and the triconch in terms of preservation is connected with the presence, until the 20th century, of a wall of unfired bricks between the columns of the various tiers in the triconch. This wall, built during the medieval period to support the three lobes, protected the paintings and is the reason why the decorative scheme of the late antique period has been almost perfectly preserved at the Red Monastery. The non-encaustic decorations have mostly been preserved in the facade. The red bands surrounding the decorated panels, the yellow, the green earth and the black and the white of the background *velaria* allow us to imagine what the decorative and chromatic characteristics of the original facade must have been (Fig. 51).

Despite long exposure to harmful agents, the molded window above the triumphal arch still retains significant sections of the polychrome decorative scheme and red inscriptions. The

lunette of the window was almost completely hidden by insect nests³¹ comprising a layer of organic material and mud several centimeters thick. Insect nests have also been found under the lintel of the left-hand niche in the fourth tier (Fig. 52).

The painted surface inside the niche itself has been affected by a uniform layer of unconsolidated deposits and insoluble salts that have migrated from the constituent materials (carbonates). The projecting parts such as the tympanum and the engaged columns are hidden by a thick layer of bird droppings, 1.5 cm thick in places (Fig. 53).

[Caption to photograph: Façade, uppermost window, lintel before restoration].

The exceptionally damaged state of the interior of the niche means that the phase of the painter of the *Virgo Lactans* has almost entirely disappeared. Fortunately, a percentage of the painted white wash has survived in the lower part of the arch (Fig. 54).

In the tier below, about half the painted polychrome disc (see Fig. 21) is missing owing to loss of plaster. However, the surviving paint layer is well preserved. In the area of the facade, this piece of decoration more than any other suggests what the chromatic potential of the palette of the third phase painter might have been. The selective subsequent repainting carried out by the painter of the *Virgo Lactans* is also well preserved to date. The distinctive purple used by the artist for some small sections in the apse is clearly visible on some of the polygons in the composition (see Fig. 26).

Although the red band surrounding the large medieval cross above the arch is very patchy, the preliminary drawing and outlines can still be seen (see Fig. 34). The ochre yellow used for the decorations inside the cross seems to be failing to adhere, particularly on the left side. During the restoration work we speculated that the arms of the cross were originally shaded with an ochre pigment that has now completely disappeared.

The encaustic green used for the decorative strip inside the arms of the cross has now been lost. All that remain are a few fragments that have survived as a result of the protection provided by residual old mortar (Fig. 55). There are signs of the stripping of the surface finish of the plaster where the wax has fallen away (Fig. 56).

In the north arch and the area below it the paint layers on the various levels of the palimpsest are unconsolidated and areas of various sizes have become detached all over the surface³² (Fig. 57).

[Caption to photograph: façade, left niche, second tier, detail]

The two medieval fragments surviving above the access door to the north lobe in the first tier are particularly patchy and the surface has been abraded to the extent that we are conserving only the imprint of the paint layer. In the left-hand fragment, wax finishes have been identified on the small column and the background, now almost entirely lost.

³¹ Presumably *Imenotteri* from the *Vespidae* family

³² It is important to remember that the thin medieval white wash has become very fragile in this area and although it is fairly well consolidated on the front of the arch, it is very patchy and adhering badly in the niche and the surrounding area (see Fig. 20).

We can confirm the description already given in the 2007 report (cf. note 27) with regard to the state of conservation of the paint layer in the corridor and *protesis*. The fourth phase white wash present throughout the *protesis* is adhering fairly well except along the margins of the fragments. These problems of adhesion and the gaps themselves can be attributed to two main causes: the first is connected with the intrinsic characteristics of the technique of applying white wash to an unprimed surface and the second with a presumed violent mechanical cleaning that 'exfoliated' the surface.

In the south lunette, the right-hand side of the composition differs from the rest as a result of serious abrasion that has affected the lower part of the picture of the Archangel in particular. The paint layer bears the traces of a resin, presumably vinyl-based, that was probably applied during restoration work in the 20th century and has made the surface very shiny (Fig. 59).

As already mentioned, the lower left-hand part of the west lunette is very patchy owing to the drastic replacement of the architrave by the Comité. This intervention is also partially responsible for the loss of portions of white wash to the left of the clipeus of the Madonna.

Extensive test cleanings carried out in the adjacent corridor brought to light a paint layer affected by generalized abrasion that has not however compromised the reading of the paintings. The technical features of the paintings, namely a thin application of paint on well-smoothed plaster, have favored their preservation. The fact that these paintings remained hidden beneath a layer of wash has proved to be their ultimate salvation (Fig. 60).

In the triconch, work has been carried out on the shafts of the granite columns in the north and south lobes to reintegrate the original medieval wash that unfortunately only survives on the top of the column shafts. This state of affairs can be attributed to some extent to the often poor adhesion between the granite and the wash and particularly to the abrasion caused by the passage of the faithful and their contact with the architectural features.

RESTORATION WORK CARRIED OUT

As in previous years, our restoration work has followed the methodological guidelines first laid down in 2003. During the subsequent missions between 2004 and 2007 we have continued to refine our working methods in an attempt to solve specific problems. Some specific methodologies regarding the cleaning of limestone in particular were implemented for the first time during this campaign.

The first task was to remove dust from the surfaces using soft bristle and sable brushes. Where portions of plaster and fragments and stratified pieces of the paint layer (palimpsest) were in immediate danger of falling, they were secured by means of small strips of Japanese paper stuck to the surface with acrylic resin in a 15% nitro diluent solution (PARALOID B72 methacrylate) and consolidated with injections, into clearly defined areas, of acrylic resin in a 20% aqueous emulsion (ACRYL 33) (Fig. 63). This was the case particularly with

some fragments of plaster on the triumphal arch and in the third tier of the façade, particularly around the polychrome disc.

In places where the plaster had been repaired or gaps plugged with inappropriate mortar during earlier restoration work, it was removed mechanically using micro-chisels and scalpels (Fig. 64). Where the composition of the pointing was compatible with the original plaster, it was brought up to the level using scalpels then consolidated and given a patina.

[Caption for photograph: E. Abrusca at work]

This proved particularly necessary in the last tier of the façade, replastered by the Comité during the 20th century.

Fiberglass rods had to be inserted in the masonry to repair the largest gaps in the architectural features and stone moldings (Fig. 65).

The rods were needed to provide a supporting framework and lasting anchorage for the mortar and reconstruction work. The mortar was applied in levels, using a mix with medium-sized grains first and finer grains on the surface. This work proved particularly necessary in two areas: on the molding of the arch above the door to the north corridor in the façade and on the tympanum in the niche in the fourth tier (Fig. 66). Hydrated lime, local sand and a small percentage of finely powdered local limestone (1.5 parts lime, 2 parts sand and 1 part powdered limestone) were used in the composition of the mortar (Fig. 67).

The plaster was consolidated by means of injections of liquid mortar with a similar composition to the original plaster but easily injectable.

In emergencies, small pieces of fallen plaster were stuck back in place using a mortar based on acrylic resin in a 35% aqueous emulsion (ACRYL 33) mixed with micronized calcium carbonate powder until the desired consistency was reached.

Raised areas of the paint layer or white wash were stuck down by means of injections of acrylic resin in a 15% aqueous emulsion (ACRYL 33). In some cases slight pressure with a flexible spatula was required, interposing a sheet of polyethylene between the spatula and the painted surface. This method proved particularly necessary in the façade for the whole area above the door to the north corridor (especially the decorations on the arch) and in the *prothesis*. Here, the working method of the painter of the *Virgo Lactans* (Figs. 66 and 67) meant that numerous fragments of white wash required this delicate restoration. Similarly, widespread flaking of the medieval level of the north arch in the façade (Figs. 68 and 69) meant that we had to consolidate specific areas in order to stick the wash back in place.

Still in the façade, localized intervention was required in the niche of the fourth tier to consolidate the white wash of the painter of the *Virgo Lactans*.

Where the paint layer was failing to adhere, it was consolidated using acrylic resin in a low 1.5% nitro diluent solution (PARALOID B72 methacrylate) applied using a fine spray and, where possible, a brush.

The methods used to clean the painted surface have been described in detail in previous reports. The system developed has shown itself to be effective and safe with regard to the

constituent materials and to reduce mechanical stress on the painted surface. The cleaning system involves, in the first place, the use of organic solvents applied using Japanese paper covered with several single-ply paper tissues to dissolve the substances on the surface (oil- and resin-based varnish). To all intents and purposes, this is a process of stripping. During this campaign, this operation proved particularly necessary in the south lunette of the *prothesis*. The application of Japanese paper and paper tissues impregnated with solvent and the natural evaporation of this substance actually produces an 'aspirating' effect, sucking up the substance and dissolving it without any mechanical action. This stripping process is followed by the cleaning work proper.

To sum up, we proceeded as follows: removal of varnish applied to the surface (oil and resin) by means of alternate applications of organic solvents applied on single-ply paper tissues until evaporation (ACETONE, NITRO DILUENT and NITRO DILUENT with the addition of DIMETHYLFORMAMIDE 4:1).

In specific cases, when wax-based substances were encountered, chlorinated solvents (TRIELINE and BALTANE) were used, heated to a temperature of approximately 45° C in a bain-marie. (These solvents were never used in the presence of a paint layer with a wax binding agent [*encaustic technique*]).

Oily substances applied to the surface and the touching-up work done during earlier attempts at restoration were removed using a slightly basic polar solution with a controlled pH (70 gr/l ammonium carbonate in distilled water). The solution was applied to the surface through several single-ply paper tissues for contact times varying between 3 and 5 minutes.

Carbon deposits, oily residues and thin films of saline efflorescence were then removed using a slightly basic polar solution (10 drops of ammonia per liter of distilled water) applied on single-ply paper tissues and working in small areas. The thicker saline efflorescences were removed using scalpels (Fig. 70).

The black lines around figures, decorative elements and inscriptions, traditionally added as a finishing touch to the painting process, were particularly fragile in some instances. After preliminary cleaning, and as work progressed, some of them had to be fixed with acrylic resin (PARALOID B72 methacrylate in a 15% nitro diluent solution).

The cleaning of the stone elements required a system different to that used for the plaster. Owing to the nature of the local limestone, the sooty residues and particulate matter were particularly ingrained both on the surface and in the pores of the stone, creating consolidated deposits over wide areas. To clean them we decided to use the same solvent mixture used for the plaster types but applied in a different way. Wood pulp was used as a support since its tixotropic properties allow longer application times without the danger of impregnation of the substrate. Once the wood pulp was removed the surface was cleaned using sponges and soft-bristled brushes (Figs. 73 and 74).

The paint was removed from the woodwork in the façade using a mixture of organic solvents (nitro diluent and acetone). The woodwork was then impregnated with a permethrin-based product (XIREIN) to treat it against attack by insects and protected with acrylic resin in a 3% nitro diluent solution (PARALOID B72).

The gaps in the paint layer were blended in using the technique of toning down with watercolors (WINDSOR & NEWTON). This technique restores legibility to the artistic palimpsest and painted surface and clarifies the reading and order of the different paint layers that can be seen.

In one case we used the technique of reintegration using hatching. This decision was taken together with the project management for the area of the left eye and part of the head of the Christ Pantocrator in the south lunette of the *prothesis* (Fig. 77).

Finally, two crack monitors were installed on the west side of the triumphal arch to monitor any worsening of the structural instability in this area (Figs. 78a, 78b, 79a and 79b).

BIBLIOGRAPHY

Mora, L., Mora, P., Philippot, Ph., *Conservation of Wall Paintings*, London 1984.

Artelab s.r.l, *Studio dei materiali costitutivi e delle tecniche impiegate per la realizzazione delle varie fasi pittoriche [Study of constituent materials and techniques used to execute the various phases of painting]* (September 2005)

Leroy, J., *Peinture copte et peinture romane*, "Actas del VIII Congreso internacional de arqueologia cristiana", Barcelona 1969, Città del Vaticano-Barcelona 1972, I, PP. 353-359.

Habib, R., *The Coptic Museum. A General Guide*, Cairo.

Du Bourguets, *The Art of the Copts*, New York, Dunbarton Oaks Papers, XXII, 1968.

Capuani M., *l'Egypte Copte*, (Milan: Citadelles & Mazenod, 1999).

L. De Cesaris and A. Luzi, Red Monastery - Monastery of St. Bishoi, Technical Report, Third Mission, 4 October – 10 November 2003.

L. De Cesaris and A. Luzi, Red Monastery - Monastery of St. Bishoi , Technical Report, Cleaning Survey Mission, December 2002.

L. De Cesaris and A. Luzi, Red Monastery - Monastery of St. Bishoi, Technical Report First Mission, 31 March – 19 April 2003.

L. De Cesaris and A. Sucato, Red Monastery – Monastery of St. Bishoi, Conservation of the Wall Paintings, Final Report, 1 November - 20 December 2004 , 28 November – 21 December 2005.

C.Meurice, *Redécouvertes et premiers travaux sur les monastères de Sohag*, 2004

Monneret de Villard U., *Les couvents près de Sohag deyr el-abiad et deyr el-ahmar*, (Milan, 1926) vol. i-ii, out of print

Rassart-Debergh, M., s.v. *Copti. Pittura*, in *Enciclopedia dell'Arte Medievale*, V.

Restle, M., *Byzantine Wall Painting in Asia Minor. A Technical Research*, Shannon 1969.

Nimmo M., Olivetti, C., *Sulle tecniche di trasposizione dell'immagine in epoca medievale*, in "Rivista dell'Istituto Nazionale d'Archeologia e Storia dell'Arte", serie III, VIII-IX, 1985-1986.